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cont.

20. A composition according to Claim 15, wherein the SCC polymer is a homopolymer.

REMARKS

Amendments

In the claims, Claim 1 has been restricted to alternative (v), i.e. to the use of side chain crystalline (SCC) polymers which are substantially free of functional groups. Claim 4 has been canceled. New claims 5-20 have been added. Claims 5-14 are dependent (directly or indirectly) on Claim 1. Claim 15 is a new independent Claim wholly within the scope of amended Claim 1. Claim 16-20 are dependent on Claim 15. These amendments have been made in the interests of speedy prosecution of this application, and without prejudice to Applicants' right to prosecute broader claims in a continuing application.

Basis for the new claims will be found as follows.

Claim	Basis
5,6	p. 6, lines 28-30, p. 9, line 14
7, 20	p. 6, l. 22
8-11, 19	p. 9, line 14; and the amendment requested on Page 6, line 26, which in turn finds basis in the documents incorporated by reference in the application as filed, as further discussed below.
12-14,18	p. 9, lines 4-5
15	Claim 1, paragraph (v); p. 9, lines 9-10 and 14, p. 6, lines 9-10 and 28-30

For the Examiner's convenience, a clean copy of the amended claims is attached

The specification has been extensively amended to secure correspondence between the restricted claims and the specification, and to correct inaccuracies (37 CFR



1.117). In addition, for the avoidance of doubt, further information has been inserted on Page 4 about the way in which the values of T_o and T_p are measured. Page 6 has been amended to insert counterparts for claims 8-10 and 18. Basis for the amendment to page 6 will be found in the U.S. Patents incorporated by reference in the application as filed, for example in the attached columns 13 and 14 of U.S. Patent No. 5, 412,035. Thus the Examiner will note the references to polymethylene moieties containing 12 to 50 carbon atoms, and their derivation from the corresponding acrylates and methacrylates, and also to the optional presence of units derived from other monomers including "other alkyl acrylates, methacrylates", in column 13, lines 52-61.

The Rejections under 35 U.S.C. 112

Applicants respectfully traverse the rejections under 35 U.S.C. 112, insofar as they are applicable to the amended claims, which do not contain the expressions to which the Examiner objected.

The Rejections under 35 U.S.C. 102/103

Applicants respectfully traverse the rejections under 35 U.S.C. 102/103, insofar as they are applicable to the amended claims, for the reasons set out below.

U.S. Patent No. 5, 519,063 (Mondet 063) discloses oils thickened with a mixture of copolymers, namely

- (1) a copolymer containing units derived from a lipophilic monomer, for example stearyl or lauryl (meth)acrylate, and units (A) derived from a hydrophilic monomer containing carboxyl or sulfonic acid groups, e.g. acrylic or methacrylic acid; and
- (2) a copolymer containing units derived from a lipophilic monomer, for example stearyl or lauryl (meth)acrylate, and units (B) derived from a hydrophilic monomer containing $-NH$, $-OH$, $--O--$ or $--CONH$, for example dimethylaminoethyl acrylate, or N-vinyl pyrrolidone.

The three references in the name of Hase (U.S. Patent Nos. 4,057,622-3-4) disclose oils thickened with various copolymers of C₆₋₂₄ alkyl acrylates and N-vinyl imidazole or N-vinyl pyrrolidone or acrylamide.

A common feature of the Mondet and Hase references is the requirement for the presence of functional groups on the polymers which are to serve as oil-thickening agents. Thus these references teach away from the invention claimed in the amended claims, which makes use of polymers which are substantially free of functional groups. Claims 8-11, 19 and 20, which specify that the SCC polymer consists essentially of the defined units, are still further distinguished from these references.

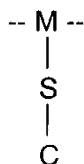
Korbanka (U.S. Patent No. 3,355, 394) and Kao (abstract of Japanese Patent No. 100534) are still more remote from the claimed invention, since they do not suggest the possibility of using an SCC polymer of any kind.

Miscellaneous

Applicants have noted the Examiner's comments with regard to material incorporated by reference, and have amended the specification to make it clear that only the United States patents are incorporated by reference. Since the material disclosed in the foreign applications and patents and in the publications is not needed to meet the requirements of 35 U.S.C. 112, Applicants have not followed the Examiner's suggestion to amend the disclosure to include the material disclosed in those documents.

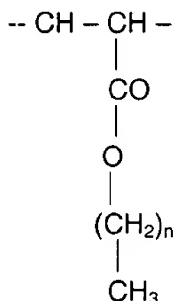
In answer to the Examiner's request for further information about SCC polymers, Applicants provide the following information.

In the small group of polymers known as side chain crystalline (SCC polymers), the repeating units have the formula



where M is part of the polymer backbone, S is a spacer unit, and C is a crystallizable group.

A typical example of such a unit is a repeating unit derived from a long chain n-alkyl acrylate having the formula $\text{CH}_2=\text{CH}.\text{COO}(\text{CH}_2)_n\text{CH}_3$, where n is 13 to 49. The repeating unit derived from such an acrylate has the formula



In such a repeating unit, the side chain of the formula $\text{--}(\text{CH}_2)_n\text{CH}_3$ is inherently crystalline, because the numerous $\text{--CH}_2\text{--}$ groups are inherently connected together in a very regular pattern. The larger the value of n, the greater the inherent crystallinity of the repeating unit. Such repeating units can likewise be derived from other polymerizable monomers which give rise to similar side chains, for example long chain n-alkyl methacrylates, and vinyl monomers containing long chain n-alkyl groups. These monomers can conveniently be referred to as SCC monomers.

The SCC polymers have been thoroughly investigated, and in consequence, those skilled in the art have a good understanding of their properties. For example, while the melting points of most polymers are heavily dependent on their molecular weight, this is not true of the SCC polymers. In an SCC polymer which contains only repeating units derived from a single SCC monomer (i.e. an SCC homopolymer), the melting point and the range over which melting takes place are predictably determined by the SCC monomer. For example, the homopolymers of n-alkyl acrylates in which the alkyl group contains 14, 16 and 18 carbon atoms have melting points of about 20, 36 and 49 °C. respectively. Furthermore, these melting points change very little with the method of preparation and the total molecular weight of the polymer. In an SCC copolymer which contains side chain crystalline units derived from two different SCC monomers, the melting point and the range over which melting takes place predictably reflect the relative proportions of the different SCC monomers, their compatibility, and their relative

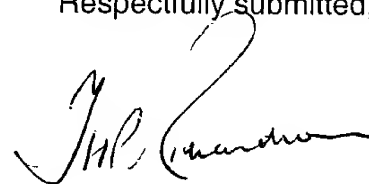
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rates of reaction in the polymerization process. There will of course be some small deviations from strictly predictable behavior, but those skilled in the art can readily investigate such deviations by routine experimentation.

CONCLUSION

It is believed that this application is now in condition for allowance, and such action at an early date is earnestly requested. If, however, there are any outstanding issues which could usefully be discussed by telephone, the Examiner is asked to call the undersigned.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'T. H. P. Richardson', with a large, sweeping flourish extending from the end of the name.

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